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# EMPOWERING
# THE PRIMARY EDUCATION FOR THE BRIGHTER GENERATION

# *PROCEEDING*

**IMPROVING MATH SKILL IN EARLY AGE OF ELEMENTARY SCHOOL THROUGH TRADITIONAL GAME "*LURAH-LURAHAN*"**

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**Abstract**

Learning math in early age of elementary school is considered as a matter by some people because it is assumed as a boring. Math, especially calculating skill is really important because the skill will be used in daily life whenever and wherever we go. The desire to learn math should be encouraged in a very early age, especially in the beginning of elementary school. The learning process of math can be implemented by combining the lesson with the game. Through that way, students will enjoy and understand the lesson better.

One of the ways that can be done is by using traditional game which is well-known in java as "*Lurah-lurahan*". This traditional game is the game which uses a tool called as *lidi* -palm leaf rib- or *biting* in Javanese term. In addition to *biting*, the game also uses chalk or marker to line the square as the game border. The game is a popular game in all over regions in Indonesia. The children playing the game are children both girls and boys around seven to twelve years old. This kind of game is a simple game which does not take much energy.

Through the game, calculating skill of children can be improved. Beside, the game is also able to improve other abilities, such as improving friendship among the children,smooth motorist coordination, and patience.

**Key words: Javanese traditional game "*Lurah-lurahan*"**

# IMPROVING MATHEMATICS SKILL IN EARLY AGE OF ELEMENTARY SCHOOL THROUGH TRADITIONAL GAME "*LURAH-LURAHAN*"

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Learning math in early age of elementary school is considered as a matter by some people because it is assumed as a boring lesson. Math, especially calculating skill is really important because the skill will be used in daily life whenever and wherever we go. The desire to learn math should be encouraged in a very early age, especially in the beginning of elementary school. The learning process of math can be implemented by combining the lesson with the game. Through that way, students will enjoy and understand the lesson better.

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## 1. Introduction

Learning mathemathic in the early age of elementary school can be troublesome for some students. It is because the lesson is considered as an uninteresting, annoying, and even boring lesson. Students in elementary to senior high school often feel that math is something scary. To make it worse, they often feel pressed because of the lesson. Parents, as well as students, sometimes feel that their children are not good enough in math because of their lack in calculating. However, math is not as bad as parents and students thing about. Math is actually an interesting lesson and can be a good friend to play with if we understand it better. Math, especially calculating skill is necessary since the skill will always be used in daily life. The desire to learn math should be encouraged as early as possible in the beginning of elementary school age. The learning method of math should be made in interesting way, such as through playing games. In addition, math should give some fun for children in understanding it.

The simple learning method can be made by using concrete things and it is made based on the age of the children. Through that way, children will be stimulated by math. The desire to learn math should be encouraged as early as possible in the beginning of elementary school age. The learning method of math should be made in interesting way, such as through playing games. In addition, math should give some fun for children in understanding it.

Math can be understood as learning about pattern and relation. Everything in this world cannot be separated from patterns and relations which are the basic concept of math. Math can be said as the way to think. People who understand math will be more practiced in thinking analytically. When a child learns about math, it will make him think analytically in their adult age. Math is also related to the art. When children learn about symmetric shapes, such as (diamond, cube), flowers, etc, they learn art in the same time. Math is also a language. When someone speaks a language, he also uses the concept of math in his language concept. The content or the utterance of a language is the result of math thought either verbal language or non-verbal language. Math is a tool as well as a language. As a tool, math helps children to do something in their daily life. One of the ways which can be done to make children love math is by applying traditional Javanese game "*Lurah-lurahan*". Through the game, math can be more fun and it will improve children's skill in math.

## 2. Discussion

Math can be said as the way to think. People who understand math will be more practiced in thinking analytically. When a child learns about math, it will make him thing analytically in their

adult age. For children, math is in everywhere! Math is natural and unseparatable part of their world. Like math concept, the children understanding of calculating moves through some steps which is controlled by a set of principle. As Gelman and Galistel (1986) say that the steps are:

1. *One-by-one principle*. This principle is used only to one name of number (one, two, three, etc) to a number calculated.

2. *Stable order principle*. This principle is used to the names of number in stable order.

3. *Cardinal Principle*. This principle is used by saying the last number which depicts object numbers in a group. For example "*one, two, three…three snakes*!"

4. *Abstraction principle*. This principle is used to calculate the part of mixing item set.

5. *Irrelevant order principal*. This principle is used to know that the order objects calculated is irrelevant.

Furthermore, a child logic mind may have not developed well to know that resetting the same objects will leave the number or the sum up that does not change. Children, in fact, want to build their own basic concepts of logical math. There are many things, such as comparing, classifying, and measuring needed when children develop conceptually in other domain developments, including affective areas, social, and aesthetic. On one hand, the other concepts which are developed by children in other areas, such as science and language will be necessary in the development of logical math (Charlesworth &Lmd, 1995).

Firstly, math knowledge will appear through complete natural experience controlled by children themselves. This kind of experience is completed by informal activities and exploration in which adults or teachers will comment or ask the questions. The experience then will be changed by structural achievement established from the activities which are planned before by the teacher. Children or kids need informal exploration period which takes long time to shape basic concepts of shape, one-one relation, weight, height, texture, and sum. For pre-school children, this period can be made through natural activities like making a building with cubes, watering, working with sand, playing puzzles, cooking, matching, and ordering things.

In kindergarten age to elementary school grade fourth, nine elements related to the math areas included in curricula are:

1. Estimation concept. Determine the policy from the result and apply it in "Working with quality and measurement, calculation, and problem solving.

2. The concept of the number of meaning and the giving number. It is the way to make students build the sum through the real world. Children can experience physically the system of giving number related to calculation, classification, and the concept of place score. Develop the sum and interpret the double use from numbers in the real usage.

3. Develop the concept of integer. It is made to make students develop the meaning of operation. This concept can be done by discussing a variation of problem situations. Connect math language and symbolism operation into problems situations and informal language. Recognize that wide structural problems can be represented by an operation.

4. The calculation of integer concept. It is made to make students be able to explain and develop appropriate ability with the facts and basic algorithms. Use various mental calculations, assessment methods, and the use of calculators in specific computational situations. The last is determining whether the results are appropriate.

5. The understanding of partial geometry concept. It is needed to make students be able to explain and classify the shapes, and to predict the results of combination, classification, and change of shapes. Develop the meaning of space. Relate the idea of geometries into the idea of numbers and measurement. Recognize and appreciate algebra in their world.
6. Measurement concept. It should be understood well in order to make students understand attributes of the height, capacity, weight, domain, volume, mass, time, temperature, and angle. Develop the process of measuring and the concepts related to the units of measurement. Make sure about the product of estimations and the use of measurement in the daily use.
7. Statistic and probability concept. These concepts should be understood well to make children be able to collect, organize, and explain the data as well as build and interpret the data. Make pattern and solve the problem involving the collection and research of the data. Find the concept of opportunity.

8. Fractions and decimal system concept. The concepts need understanding well to make students develop the concept of fractional numbers, mixed number, and decimal system. Develop what is meant by the sum for fractions and decimal system. Use the model to connect fractions into decimal system and find out the equal fraction. Use the model to explore operation in fractions and decimal system. Apply fractions and decimal systems into problem situations.
9. Pattern and connection concept. These should be understood well to make students be able to recognize, explain, and create wide patterns. Show and explain mathematical relation of variables and open sentence to relate the relation.

To promote the optimal development of these concepts, effective teachers should complete the classroom with chosen system and manipulative tools to attract students in learning math. As well as any other knowledge, the aspects of curriculum should be able to be used to promote concept of logical math. Burns (1995) says that integration of language and writing about math is a good technique to give children hope in testing their ideas and reflect what they have learnt.

Children have development steps and characteristics which are different from each other depending on the age. The special way of children in thinking is that they can absorb evertyhing around them concretelly. Jeromer Bruner says that there are three ways of learning math in children implicating directly into the learning of math since the early age. They are:

(1). Enactive : Children learn a concept concretely.

For example: A teacher shows an orange (the real orange)

(2). Iconic: children learn a concept through pictures.

For example: A teacher shows an orange picture.

(3). Symbolic: children learn a concept through symbols, such as picturer and letters.

For example: A teacher shows a writing of ”Orange”

Early age or pre-school age is an effective age to develop several potential things owned by them. The effort to develop those potential things can be done through several ways including through calculating game. Calculating game does not relate to cognitive skill only. But it deals with the readiness of social mental and emotional skill. That is why in the practice, it should be conducted interestingly, variously, and delightedly. Calculating game is a part of math itself. It is needed to grow calculating skill which is, in fact, necessary in daily life, especially number concept which is the basic of math skill development as well as the readiness to join basic education.

Maryani (2010) says that basically, playing is an activity being able to make children happy. Playing is the activity done by children all day long because for children, playing is their life and their life is for playing (Majesty, 1990:196-197). Meanwhile, Piaget in Mayesti (1990:42) says that playing is an activity done continuously and bring joyful or satisfaction for a child. Parten in Dockett and Fleer (2000:14) sees playing as social tool. By playing, children are expected to give an agreement for themselves in exploring, finding, and expressing their feeling, recreating, and studying interestingly. Moreover, playing can help children to know themselves better, people they live with, and environment where they live. Playing plays a big role in children life and children development including their cognitive development which is heading into logical math intelligence (logic smart). It is intelligence in the terms of number or the ability in using logical mind.

In Java island, there is a game which can improve children skill in math. The game is called as “*Lurah-lurah*an”. According to Suwandi in Ahmad Yunus (1981), there is a game in Javanese society, particularly in D.I Yogayakarta, which the name of the game is unique. It is called “*Lurah-lurah*an”

People may feel confused with the name of the game. In this game, in fact, there is no one who is pretending to be a head of village (*Lurah*). *Lurah* in this game is just the name of the game itself. In Javanese language, the repeating word means that someone pretends to be something of the base word. For example,”kucing-kucingan’ means that there is one who is pretending to be a cat. The term *Lurah* used in the game is used more to appoint the tool used in the game. The tool used in the game is *lidi* –palm leaf ribs- . One of *lidi* which is folded is considered as “*Lurah*, *Mbok*- big mama-, or *gacuk* –leader-”. It means that in this game, there is no relation with someone who plays as *Lurah*. In one regency in D.I Yogyakarta, like Sleman, the game is called as *Dolanan Cuthikan*. It is called *cuthikan* since the game is played by “*nyuthik*” which means taking something with the help of a tool. The name of the game may be different in other places. In Javanese language, according to Baoesastra Jawa (W.J.S. Poerwadarmita, 1939, page 279) the game is called as “*Lurah*” which means people who governs a village.

This traditional game is one of the games which needs tool to play it. The tool used is *lidi*-palm leaf ribs- or in Javanese term *biting*. Wood is also able to be used, but *lidi* is more popular because of its ease to find. Other tool used is chalk or marker which is used to make line as the border of the game. This game is quite popular in Java island.

**Figure** 1. The heap of *lidi*

**Figure 2.** Students of MI An-Nuur are playing "*Lurah-lurahan*" with the teacher

The game is played by children in age around 7-12 years old, both boys and girls. This game does not take much energy. What is needed in this game is patience and persistence. The game is played in the leisure time in the morning, afternoon, or even evening.

Preparations before playing the game are as the followings:

1. Prepare the place to play the game with the size 1 to 4 meter depending on number of players.
2. Make a group consist of 2 to 4 people.
3. Make the field for "*Lurah-lurahan*" with the size 30x30 cm for each group. It can be done on the floor as well.
4. The game is started by "sut" or "*hompimpah*" for the order who will become the first.
5. Prepare 9 *lidi* with the following detail: 8 *lidi* with the length 10 cm and 1 lide with the length 12 cm. 12 cm *lidi* functions as "*lurah*" or the tool to take (Javanese term "nyuthik"). 12 m *lidi* should be folded on the tip, around 10 and 2 cm.

   The ways to play "*Lurah-lurah*an" are as the following

   1. All players should agree with the rule made together before. The rule is usually made orally. Among oral agreements are: 1) if a *lidi* throws in the air and it goes out of the line, it will not be included in the game; 2) when a player is trying to take a *lidi* and it makes other *lidi* moves, it means he/she is over; 3) *lidi* "*Lurah*" can be used to take "*nyuthik*" other *lidi*s: for example, the point of a *lidi* is 10, 20, and soon; 4) the maximum point (to get the crop) should be agreed together. For example 500, 1.000, and so on; player who gets the least point is considered as losing player (he/she can be punished depending on the first agreement).

   2. If in a group, there are 2 players, like A and B, so both players can play face to face. If player B gets the first turn, so he holds 9 *lidi*s. With the distance around 30 cm on the floor, player B throws the *lidi*s into the box in front of him. The *lidi*s will be thrown and spread out in the box. When a *lidi* goes out of the box or the line of the box, the *lidi* will be disqualified.
      All *lidi*s should be held then thrown to the side so that the *lidi*s do not go out of the area. The *lidi* which does not heap can be taken and it belongs to the player. The *lidi* heaps with other *lidi*s should be taken by sticking the finger on the tip of the *lidi* then it should be taken by other hand so that the *lidi* taken does not stick with other *lidi*s. When the player gets the *lidi* shaping the letter L, it can be used to help taking the heaped *lidi*. The more the *lidi*s taken, the more points he or she will get. The player should be changed if she or he sticks his hand to the *lidi*. The activity is done continuously until the *lidi*s are over.

**Figure 3**. Students of MI An-Nuur are playing "*Lurah-lurahan*"

From the game we can see that it is appropriate with math principles for children. Those are:

1). Children use concrete thing, in this game *lidi* which is used as game medium. This is used to strengthen children concept of calculating with concrete thing

2). Children experience and involve themselves actively in calculating so that children get the understanding of calculating. It is proven by children who can calculate quickly. When the point of a *lidi* is 10, the children will directly

calculate 10, 20, 30, 40, and so on. For the "*Lurah*", the point is 5 times of the normal *lidi*.

3). Make playing as a meaning activity.
4). In the game, problems and conflicts among the players can stimulate children to think accommodation and adaptation, like making the rules together and obey the rules made together.
5). The game is suitable with order lesson, begin with enactive (concrete) to symbolic.
6). Through the game, the role of the teacher is not as just a knowledge giver, but as a facilitator or motivator.
7). The game is also suitable with appropriate activity with children development area.
8). The game makes playing as the meaningful activity. The game can connect math with daily experience.
9). The game can encourage children to speak either to the teacher or to the other friends.
10). The game uses model and manipulative things to help children in learning math especially in calculating.

From the game, they make an agreement agreed by each group about number of tens, hundreds, and thousands. The table below shows the agreement about the point in "*Lurah-lurahan*" in Islamic Elementary School- Madrasah Ibtidaiyah- An-Nuur Sleman 2013.

**Table 1. *Lidi* Point Agreement**

| Number of Lidi | Point of 1 Lidi | | |
|---|---|---|---|
| | Point per unit | Point per tens | Point per hundred |
| **1** | **1** | **10** | **100** |
| **2** | **2** | **20** | **200** |
| **3** | **3** | **30** | **300** |
| **4** | **4** | **40** | **400** |
| **5** | **5** | **50** | **500** |
| **6** | **6** | **60** | **600** |
| **7** | **7** | **70** | **700** |
| **8** | **8** | **80** | **800** |
| **Lurah** | **2** | **20** | **200** |
| **Sum Up** | **8+2 = 10** | **80+20=100** | **800+ 200= 1000** |

From the observation made it can be drawn the conclusion that children will calculate easily after they make an agreement with their group. The writer divides the group into three groups. The first group points unit, the second group points tens, the third group points hundreds. The result of the observation shows that each child in each group does not feel difficulty in calculating the lidis. In a while, they are thinking of calculating one, two, three,…or ten, twenty, thirty, and so on. However, in the second round, they fluently calculate the *lidi*. The winner of the game is he or she who can reach the highest point based on the first agreement. When the agreement is in unit, the winner is the first player reaching 100 points. For tens, the winner wins when he or she reaches 1000 points. For hundreds, the winner should reach 10000 points. Therefore, to get the highest points, the players should pass some rounds. Each round should be passed persistently and patiently so that the player could reach the maximum point.

## 3. Conclusion

Learning mathemathic in the early age of elementary school can be troublesome for some students. It is because the lesson is considered as an uninteresting, annoying, and even boring lesson. Students in elementary to senior high school often feel that math is something scary. To make it worse, they often feel pressed because of the lesson. Parents, as well as students, sometimes feel that their children are not good enough in math because of their lack in calculating. However, math is not as bad as parents and students thing about. Math is actually an interesting lesson and can be a good friend to play with if we understand it better. Math, especially calculating skill is necessary since the skill will always be used in daily life. The desire to learn math should be encouraged as early as possible in the beginning of elementary school age. The learning method of math should be made in interesting way, such as through playing games. In addition, math should give some fun for children in understanding it.

The simple learning method can be made by using concrete things and it is made based on the age of the children. Through that way, children will be stimulated by math. The desire to learn math should be encouraged as early as possible in the beginning of elementary school age. The learning method of math should be made in interesting way, such as through playing games. In addition, math should give some fun for children in understanding it. One of the ways which can be done to make children love math is by applying traditional Javanese game "*Lurah-lurahan*". Through the game, math can be more fun and it will improve children's skill in math. Through the game, calculating skill of children can be improved. Beside, the game is also able to improve other abilities, such as improving friendship among the children, soft motorist coordination, and patience.

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